

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method of testing a bit error rate for each of ~~N~~ a plurality of (N) of optical communication channels, N being greater than 2, in a wavelength division multiplexed optical communication system having N optical transmitters communicating to N optical receivers via N communication channels, the method comprising:

C2 cascading said N optical communication channels such that an electrical output of an optical receiver i for an optical communication channel i is connected to an input of an optical transmitter i + 1 for an optical communication channel i + 1, for all values of i from one to N-1, so as to form a continuous cascade of optical transmitter/receiver pairs;

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel;

supplying the bit error rate test signal from an output of optical receiver N to the bit error rate tester;

detecting errors in the bit error rate test signal received by the bit error rate tester and calculating therefrom a measured

system bit error rate;

comparing the measured system bit error rate with a predetermined system bit error rate threshold;

~~indicating that the bit error rate for each of the  $N$  optical communication channels is less than a specified bit error rate value when the measured bit error rate is less than or equal to the predetermined system bit error rate threshold; and~~

C2 monitoring a signal quality for the bit error rate test signal at ~~an input of~~ each of the  $N$  optical transmitters and  $N$  optical receivers when the measured system bit error rate is greater than the predetermined system bit error rate threshold to thereby determine which of the  $N$  optical communication channels has an associated bit error rate value that is greater/less than a specified bit error rate value.

2. (Original) The method of claim 1, wherein said predetermined system bit error rate is equal to the specified bit error rate for each of  $N$  optical communication channels.

3. (Previously Presented) The method of claim 1, wherein said monitoring said signal quality includes a bit parity check.

4. (Currently Amended) The method of claim 3, wherein said monitoring includes monitoring a bit interleave parity for said bit parity check on each electrical signal in the  $N$  optical ~~transmitter~~ transmitter/receiver pairs.

5. (Currently Amended) A method for performing a bit error rate test for a plurality of optical communication channels of a wavelength division optical communication system having transmitters and receivers, comprising:

C2 supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel of said plurality of optical communication channels arranged in a continuous cascade of a plurality of transmitter/receiver pairs;

receiving the bit error test signal at the bit error rate tester from a final optical receiver;

detecting a measured bit error rate; and

identifying at least one faulty communication channel from said plurality of optical communication channels by performing a bit parity check ~~by monitoring a signal quality of the bit error rate signal input to each transmitter and each receiver of a~~ for each transmitter/receiver pair because the measured bit error rate

is greater than a predetermined system bit error rate threshold.

6. (Previously Presented) The method of claim 5, further comprising monitoring a signal quality for the at least one faulty communication channel using an internal performance monitor.

92 7. (Previously Presented) The method of claim 6, wherein said internal performance monitor checks a signal transmitted through the at least one faulty communication channel.

8. (Previously Presented) The method of claim 5, further comprising passing said bit error rate test signal through said plurality of optical communication channels.

9. (Currently Amended) A system for testing optical communication channels for wavelength division multiplexed optical communication using transmitters and receivers, comprising:

a bit error rate tester to generate a bit error rate test signal, wherein the bit error rate test signal is transmitted over a plurality of optical communication channels arranged in a continuous cascade of optical transmitter/receiver pairs;

said tester determining a measured bit error rate, wherein said tester determines whether said measured bit error rate is greater than a predetermined bit error rate threshold for said plurality of optical communication channels; and

a diagnostic analyzer to analyze diagnostic output signals from said transmitters ~~in response to monitoring a signal quality of said bit error rate signal input to each of said transmitters~~ and said receivers and to identify at least one faulty communication channel from said optical transmitter/receiver pairs using a bit parity check because said measured bit error rate is greater than said predetermined bit error rate threshold.

10. (Previously Presented) The system of claim 8, further comprising an internal performance monitor coupled to said diagnostic analyzer.

11. (Previously Presented) The system of claim 9, wherein said internal performance monitor includes an error monitoring unit.

12. (New) The method of claim 1, wherein said monitoring monitors a received signal quality for the bit error rate test

signal supplied by the bit error rate tester, as the bit error rate test signal is propagating from the input for the first optical transmitter to the output of the optical receiver  $N$ .

13. (New) The method of claim 1, further comprising:

indicating that a bit error rate for each of the  $N$  optical communication channels is less than a specified bit error rate value when the measured system bit error rate is less than or equal to the predetermined system bit error rate threshold; and

Q2 14. (New) The method of claim 1, wherein the monitoring of the bit error rate test signal is performed at an input of each of the  $N$  optical transmitters and  $N$  optical receivers.

15. (New) The method of claim 5, wherein the plurality of optical communication channels include three or more optical communication channels that are cascaded.

16. (New) The method of claim 5, wherein the identifying at least one faulty communication channel monitors the signal quality of the bit error rate signal, as the bit error rate test signal is propagating from the input for the first optical

transmitter through the continuous cascade of transmitter/receiver pairs.

17. (New) The method of claim 9, wherein the plurality of optical communication channels includes three or more optical communication channels that are cascaded.

18. (New) The method of claim 9, wherein the diagnostic analyzer is configured to analyze the diagnostic output signals from said transmitters and receiver in response to monitoring a signal quality of the bit error rate signal input to each of said transmitters and said receivers.

19. (New) The method of claim 18, wherein each of said transmitters and said receivers is configured to monitor the signal quality of the bit error rate signal supplied by the bit error rate tester, as the bit error rate test signal is propagating from the input of the first optical communication channel to the final optical receiver.

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